

REMARKS

Claims 49, 55-61 and 70-71 are pending with new claim 71 being added. By this Amendment, claims 49 and 70 are amended, claims 1-48, 50-54, and 62-69 have been previously canceled.

Claims 49, 59 and 61 were rejected under 35 USC 102(b) as being anticipated by Louie *et al.* (USP 5,591,540). Claims 60 and 70 were rejected under 35 USC 103(a) as being unpatentable over Louie. Claims 55, 56, and 58 are rejected under 35 USC 103(a) as being unpatentable over Louie in view of Sasaki *et al.* (USP 6,277,516).

The invention as recited in amended claim 49, is exemplified in the patent specification as a laminate package 1 for an energy storage device in the form of a supercapacitor 2 having two terminals 3 and 4. Package 1 is defined by a single sheet of laminate material that is folded along its length, and includes an inner barrier layer 5 for defining a cavity 6 to contain supercapacitor 2. Layer 5 has two opposed portions that are sealingly engaged along three opposed edges of the folded sheet from between which terminals 3 and 4 extend from cavity 6. Package 1 also includes a sealant layer 11 that is disposed intermediate layer 5 and at least one of terminals 3 or 4. Layer 11 is for sealing layer 5 to one of terminals 3 or 4 and for offering a barrier to the passage of one or more contaminants into cavity 6. Package 1 further includes an outer barrier layer 12 bonded to layer 5, where the barrier layer also has a metal layer 13.

Amended claim 70 recites a sheet of laminate material that comprises the inner barrier layer, sealant layer, and outer barrier layer described above.

Louie *et al.* (USP 5,591,540) discloses packaging for an electrochemical device 10 having two tabs (or terminals) 34 and 36. The packaging includes a polymer layer 23 (which is interpreted to be an inner barrier layer) and a polymer sealing strip 30 (which is interpreted as being a sealant layer) being disposed intermediate layer 23 and at least one of tabs 34 or 36. The packaging further includes a polymer layer 25 (interpreted as being an outer barrier layer) bonded to layer 23 and having a metal foil 14 (which is interpreted as being a metal layer). However, Louie *et al.* does not disclose packaging that includes a laminate sheet folded along

its length and furthermore does not disclose packaging that is sealingly engaged along three opposed edges of the folded sheet. In fact, the device shown in Figure 4 of Louie *et al.* indicates that it is sealed along all four edges. It is also recited in Louie *et al.* at column 4, lines 30 to 35 that:

" ... a heat press can be used around the edges of the package to seal the two packaging films together by forming a seam 44 that extends continuously around the electromechanical charge storage device within the package perimeter ..."

Given that seam 44 continuously extends around device 10 and is directly related to the sealing of the packaging, Louie *et al.* teaches away from a packaging that is sealingly engaged along three opposed edges. It is noted that a packaging sealingly engaged along three opposed edges would not have a continuous seam but a seam with two spaced apart ends.

Sasaki does not make up for the deficiencies of Louis. As stated in the previous Amendment, Sasaki discloses pretreating a terminal with a heat fusion bonding seal material and then heat fusion bonding the terminal to the container to seal the container. There is no disclosure in Sasaki that teaches or suggests providing a single sheet of laminate material that is folded along its length, and includes an inner barrier layer for defining a cavity to contain an energy storage device such as a supercapacitor.

In embodiments of the present invention, the construction of the package is advantageous because it :

1. Facilitates manufacture by allowing a continuous feed of the sheet to be used. Furthermore, the single conductor, as opposed to the two conductors used in Louie *et al.*, reduces the parts required for manufacture thereby assisting in the reduction of the overall expense of manufacturing the device;
2. Reduces the need for a continuous seal on all edges following the placement of the energy storage device within the package;
3. Allows positive placement of the energy storage device against the fold.

Claims 49 and 70 have been amended to specifically include the feature of sealing the three edges of the folded sheet. Support for these amendments can be found in the

specification at paragraph 72 (pg. 10, lines 6-11), among others. Since the remaining claims are dependent on claim 49, these claims are also allowable over the cited references.

In view of the above, reconsideration and withdrawal of the rejection of claims 49, 55-61 and 70 under 35 USC 102(b) and 103(a) is respectfully requested.

New claim 71 is directed to the embodiments having a combination of:

- i. The outer layer having a metal layer that is coextensive with the inner barrier layer; and
- ii. an inner layer between the outer layer and the sealant layer.

This combination is not disclosed in any of the cited prior art references.

Referring to Figure 3 of the present application, sealant layer 11 is intermediate the inner barrier layer 5 and at least one of the terminals 3 or 4. Moreover, outer layer 12 is outside the inner layer 5. The result being a minimum of two layers intermediate each terminal and metal layer 13. Support for the outer layer 12 having a metal layer 13 can be found on page 9, lines 3 to 4 of the specification, among others.

Louie recites a construction whereby layer 34 (the terminal) and its associated electrode layer 16 are located next to layer 14 (the metal layer), as best shown in Figure 1 of Louie *et al.* That is, the metal layer (layer 14 of Louie *et al.* is not in the outer layer (layer 23 of Louie *et al.*).

In embodiments of the present invention use is made of layer 13 for its barrier properties. However, the inclusion of the metal layer in the outer layer allows for additional advantages in manufacture and improved lifetime of the resultant supercapacitor. Particularly, the formation of the package includes the application of pressure and heat to effect the seal between the opposed portions and the terminals. By having the metal layer in the outer layer it is possible to reduce the risk of the conductive metal layer being electrically contacted with either of the terminals as the pressure is applied. Moreover, the application of heat results in any plastics layers softening and, due to the pressure, flowing. This can result in thinning of the plastics layers near the proposed seal, further increasing the risk of the metal layer contacting one or more of the terminals. Again, by having the metal layer included in the outer layer, this risk is reduced, and the manufacture of the supercapacitor is able to be more reliably carried out. For it is possible with the use of the invention to apply more heat to the area of the

proposed seal to better ensure the required bonding occurs, without greatly increasing the susceptibility of contact between the metal layer and the electrode.

Accordingly, favorable consideration of new claim 71 is respectfully requested.

The Examiner is invited to contact the undersigned at (202) 220-4200 to discuss any matter concerning this application.

Applicants do not believe that any additional fees are required in connection with this submission. Nonetheless, Applicants authorize payment of any additional fees under 37 CFR §§ 1.16 or 1.17 or credit any overpayment to Deposit Account No. 11-0600.

Respectfully submitted,



Shawn W. O'Dowd
Registration No. 34,687

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KENYON & KENYON LLP
1500 K Street, N.W. – Suite 700
Washington, D.C. 20005-1257
Tel: (202) 220-4200
Fax: (202) 220-4201
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